

# Scott Vaughn Burger

## Curriculum Vitae

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## Education

B.S. Physics, Western Washington University, *expected* 2010.

*Minors:* Mathematics *expected* 2009 and Astronomy.

## Teaching and Research Fields

Cosmology, Astronomy, Physics, Science Education

## Academic Experience

*Western Washington University, Department of Physics and Astronomy*

Planetarium Support Staff, Winter 2007–present.

Research Assistant, Kenneth J. Rines, Summer 2008–present.

## Research Experience and Interests

### *Research*

My current project involves probing the faint-end of the galaxy cluster HCG68 and determining the parameters of its luminosity function. This allows better modeling of finding a link between galaxy luminosity and dark matter halo abundances.

### *Astronomica Lecture Series*

These 4, non-profit lectures were developed and presented by me for the Western Washington University Physics Club and performed at Western Washington University. These lectures were done solely for the benefit of the students and general public.

*Quarks and Quarks:* A facts-based approach to the strange worlds of cutting-edge science. This talk included topics such as particle physics research at the Large Hadron Collider at CERN, nanotechnology, astrobiology, solar system weather, black holes and extra-solar planets. November 1, 2008

*4 Million Years Per Second:* A talk on the 14-billion year history of the universe compressed into 50-minutes. This talk included topics such as pre-Big Bang cosmology, the Big Bang, Inflationary Theory, the electroweak epoch, Big Bang Nucleosynthesis, decoupling and universal structure formation. November 8, 2008

*Shedding Light on Dark Matter:* Lecture on my personal field of interest, covering the recent leaps made in the understanding of dark matter. This lecture covered the initial discovery of dark matter, its properties, current research and the controversy surrounding it and the competing theory, Modified Newtonian Dynamics. November 15, 2008

*The Tick-Tock of Time Travel:* The final lecture, on the topic of time. The talk covered how physics describes time as a fourth spatial dimension, quantifying time, the theory of Special Relativity, proposed theories on how time interacts with gravitational fields and science fiction stories on time travel to the past. November 22, 2008

### *Working Articles*

Dark Matter ([http://www.wwu.edu/depts/skywise/a101\\_darkmatter.html](http://www.wwu.edu/depts/skywise/a101_darkmatter.html)), with Brad Snowder (2007).

Western Washington University Planetarium Field Manual: A Guide For the New or Perplexed (August 2008).

### *Interests*

For my senior project at Orcas Island High School, I constructed an 8-inch, Dobsonian telescope which I used to demonstrate how astrophotography works. My senior paper topic was on the differences between government and privately-funded spaceflight and space exploration.

The Thought Experiment is a podcast that covers the history of mathematical, philosophical and physical thought experiments throughout history. The thought experiments range from Euthyphro's Dilemma to the EPR Paradox. August 2006–present.

## **Invited Talks**

### *University Seminars*

Current Theories in Dark Matter Research, Whatcom Community College, November 19, 2008.

## **Teaching**

### *Planetarium Shows at Western Washington University*

The Constellations of Winter, Winter 2007.

Orion: The Hunter, Spring 2008.

A Brief Tour of The Solar System and Beyond, Spring 2008.

The Constellations of Spring, Spring 2007.

*Cosmos: A Personal Voyage* by Carl Sagan, Spring 2008

## **Activities**

### *Service*

Vice President, Society of Physics Students, Western Washington University, 2008–present.

### *Memberships*

Seattle Astronomical Society 2006-2007.

Scientists and Engineers For America, 2008–present.

## Miscellaneous

### *Computer Skills*

C++, IDL, Excel, Mathematica, L<sup>A</sup>T<sub>E</sub>X.

## References

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